

APPENDIX G

Regional Irrigation Distribution System Phases 1 (Feasibility Analysis), 2 (Subregional Analysis) & 3 (Implementation)

EXECUTIVE SUMMARY

The Regional Irrigation Distribution System (RIDS) project was one of the recommendations identified in the District's *2000 Lower West Coast Water Supply Plan* (2000 LWC Plan). The 2000 LWC Plan recommended the RIDS Feasibility Study to evaluate the "feasibility of constructing regional irrigation water distribution system(s) and other options to meet the growing urban irrigation demands of this area." Accordingly, the objective of the RIDS Feasibility Study is to develop the preliminary design information for a regional, interconnected irrigation system that enables the maximum use of non-potable water to meet all or a portion of the projected year (2020) urban irrigation demand.

The RIDS project was needed to address the following: the high rate of population growth in the region, to free up water from conventional sources for other uses; sharing of sources to meet demands over the region; and the increased demand for irrigation water. Some of the elements of the RIDS program is the interconnection of irrigation water, storage and the reduction of conventional sources.

There were three phases to the RIDS project: Phase 1, Feasibility Analysis (2001 to 2002)); Phase 2, Subregional Analysis (2003 to 2004); and Phase 3, Implementation (beginning in 2004). Phase one was completed in 2002 and phase 2 was completed in 2004. Phase 3, the implementation phase, is now being rolled into the State of Florida and the District's Alternative Water Supply (AWS) Funding Program which provides funding opportunities for AWS projects.

The Master Plan-Feasibility Analysis study area encompasses the coastal area (western portion) of the Lower West Coast Region. It includes the service areas of the Cities of Cape Coral, Fort Myers, Marco Island and Naples, and the franchise areas for Lee County Utilities, Collier County Utilities, Florida Water Services, Gulf Environmental Services and Bonita Springs Utilities.

Due to the scope and complexity of the issues involved, the historic development patterns and the fact that existing centralized irrigation systems are controlled by separate entities, the RIDS Feasibility Study recommended taking a subregional approach, with the ultimate goal of creating a regionally integrated network. Subregional feasibility studies enhance existing information, refine recommended projects, provide more detailed cost estimates and establish a basis of design information. The study area is divided into subregions as follows:

- *Subregion 1* covers the Bonita Spring Utilities / Collier County / City of Naples service areas.
- *Subregion 2* addresses the Cape Coral / North Fort Myers service areas.

- *Subregion 3* encompasses the City of Fort Myers and Lee County service areas.

The subregional analysis was completed in December 2004 and recommended a group of projects to be constructed during the implementation phase.

Although this area had been progressive in developing alternative supply sources including reclaimed water, these sources would not be adequate to meet future demands. In addition, because utilities in this sub-region have their own discrete infrastructure, there has been no optimization of the resource on a regional basis.

This analysis evaluated different scenarios and determined that a sub-regional series of inter-local agreements would work best and those individual utilities would manage and operate the system based on interlocal agreements.

To determine the amount of water from alternative sources needed for future urban irrigation water, an evaluation of water demands was performed. The demand analysis was determined on a temporal basis.

Alternative sources of supply were determined to address the urban irrigation demands. Additional allocations from resources that are currently stretched, such as groundwater, would be minimized. Therefore, an inventory of potential sources of supply was conducted and prioritized to address future irrigation water needs in the study area. These potential sources of supply were:

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- Reclaimed wastewater from municipal wastewater treatment plants.
- Water recovered during the dry season from reclaimed water aquifer storage and recovery (ASR) systems recharged during the wet season.
- Surface water from streams, rivers, abandoned borrow pits and canal systems having salinity control structures.
- Water recovered during the dry season from surface water ASR systems recharged during the wet season.

In order to develop a preliminary cost estimate associated with the projects, various potential projects were analyzed on a subregional basis. The estimates consider the financing of initial capital costs, including assumptions about potential grant funding, and annual operations and maintenance expenses. These costs are then divided by the expected production of irrigation water resources for the identified projects to determine the unit cost of the irrigation water resources for each subregion. In order to calculate the cost per gallon, the total annual production of each project was assumed to be approximately equal to 180 days of production based on the project capacity measured on an average daily basis. The unit costs for the development of the irrigation water resources as identified herein range from \$0.50 to \$1.50 per one thousand gallons depending on the project.

Thirty two projects were identified as preferred alternatives for the 3 subregions and twenty eight would use aquifer storage and recovery (ASR) for storage and four were interconnects. The potential water sources identified for the preferred alternatives were reclaimed water/ASR*, surface water/ASR* and other systems (*contingent upon regulatory considerations). It was estimated that 221 million gallons a day of urban irrigation water could be provided by 2020 and the total capital cost was estimated at \$208 million dollars.

The implementation phase of this project has been rolled into the Alternative Water Supply Funding Program that has a projected \$36 million dollars a year available from the State of Florida funding and the District match. Eighty percent of this funding is reserved for projects listed in the SFWMD water supply plans although the listing of the project does not guarantee funding. The SFWMD Governing Board approves the annual funding of the projects.

Conclusions of the RIDS project was that it provided a regional benefit; local utilities manage and operate the system with interlocal agreements; and that the use of conventional water use would be offset for the future.

REFERENCES CITED

Boyle Engineering Corporation. 2002. *Feasibility Study for the Regional Irrigation Distribution System Subregions 1, 2 and 3*. Prepared for the South Florida Water Management District. Water Supply Planning Department, SFWMD, West Palm Beach, FL.